



United States Patent [19]

Hartman et al.

[11] Patent Number: 5,960,411
[45] Date of Patent: Sep. 28, 1999

- [54] **METHOD AND SYSTEM FOR PLACING A PURCHASE ORDER VIA A COMMUNICATIONS NETWORK**
- [75] Inventors: **Peri Hartman; Jeffrey P. Bezos; Shel Kapahn; Joel Spiegel**, all of Seattle, Wash.
- [73] Assignee: **Amazon.com, Inc.**, Seattle, Wash.
- [21] Appl. No.: **08/928,951**
- [22] Filed: **Sep. 12, 1997**
- [51] Int. Cl.⁶ **G06F 17/60**
- [52] U.S. Cl. **705/26; 705/27; 345/962**
- [58] Field of Search **705/26, 27; 380/24, 380/25; 235/2, 375, 378, 381; 395/188.01; 345/962**

[56] References Cited

U.S. PATENT DOCUMENTS

4,937,863	6/1990	Robert et al.	380/4
5,204,897	4/1993	Wynman	380/4
5,260,999	11/1993	Wynman	384/4
5,627,940	5/1997	Rohra et al.	395/12
5,640,501	6/1997	Turpin	395/768
5,640,577	6/1997	Scharmer	395/768
5,664,111	9/1997	Nahan et al.	705/27
5,715,314	2/1998	Payne et al.	380/24
5,715,399	2/1998	Bezos	705/27
5,727,163	3/1998	Bezos	705/27
5,745,681	4/1998	Levine et al.	395/200.3
5,758,126	5/1998	Daniels et al.	395/500

FOREIGN PATENT DOCUMENTS

0855659 A1	1/1998	European Pat. Off.	G06F 17/30
0855687 A2	1/1998	European Pat. Off.	G07F 19/00
0845747 A2	6/1998	European Pat. Off.	G06F 17/60
0883076 A2	12/1998	European Pat. Off.	G06F 17/60
WO 95/30961	11/1995	WIPO	G06F 17/60
WO 96/38799	12/1996	WIPO	G06F 17/60
WO 98/21679	5/1998	WIPO	G06F 17/60

OTHER PUBLICATIONS

Jones, Chris. "Java Shopping Cart and Java Wallet; Oracles plans to join e-commerce initiative." Mar. 31, 1997, Info-World Media Group.

"Pacific Coast Software Software creates virtual shopping cart." Sep. 6, 1996. M2 Communications Ltd 1996.

"Software Creates Virtual Shopping Cart." Sep. 5, 1996. Business Wire, Inc.

Terdoslavich, William. "Java Electronic Commerce Framework." Computer Reseller News, Sep. 23, 1996, CMP Media, Inc., 1996, pp. 126, http://www.elibrary.com/id/101/101/getdoc...rydocid=9022697@library_d&dtype=0-0&dstn=. [Accessed Nov. 19, 1998].

"Internet Access: Disc Distributing Announces Interactive World Wide." Cambridge Work-Group Computing Report, Cambridge Publishing, Inc., 1995, http://www.elibrary.com/id/101/101/getdoc...docid=1007497@library_d&dtype=0-0&dstn=0. [Accessed Nov. 19, 1998].

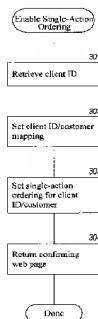
(List continued on next page.)

Primary Examiner—James P. Trammell
Assistant Examiner—Demetra R. Smith
Attorney, Agent, or Firm—Perkins Coie LLP

[57] ABSTRACT

A method and system for placing an order to purchase an item via the Internet. The order is placed by a purchaser at a client system and received by a server system. The server system receives purchaser information including identification of the purchaser, payment information, and shipment information from the client system. The server system then assigns a client identifier to the client system and associates the assigned client identifier with the received purchaser information. The server system sends to the client system the assigned client identifier and an HTML document identifying the item and including an order button. The client system receives and stores the assigned client identifier and receives and displays the HTML document. In response to the selection of the order button, the client system sends to the server system a request to purchase the identified item. The server system receives the request and combines the purchaser information associated with the client identifier of the client system to generate an order to purchase the item in accordance with the billing and shipment information whereby the purchaser effects the ordering of the product by selection of the order button.

26 Claims, 11 Drawing Sheets



OTHER PUBLICATIONS

Nance, Barry, "Reviews: A Grand Opening for Virtual Storefront With Middleware." Jun. 1, 1997, CMP Media, Inc. 1997, p. 80, [http://www.elibrary.com/getdoc.cgi?id=117 . . . docid=1257247@library_a&dtype=0-0&dist=0](http://www.elibrary.com/getdoc.cgi?id=117...docid=1257247@library_a&dtype=0-0&dist=0). [Accessed Nov. 19, 1998].

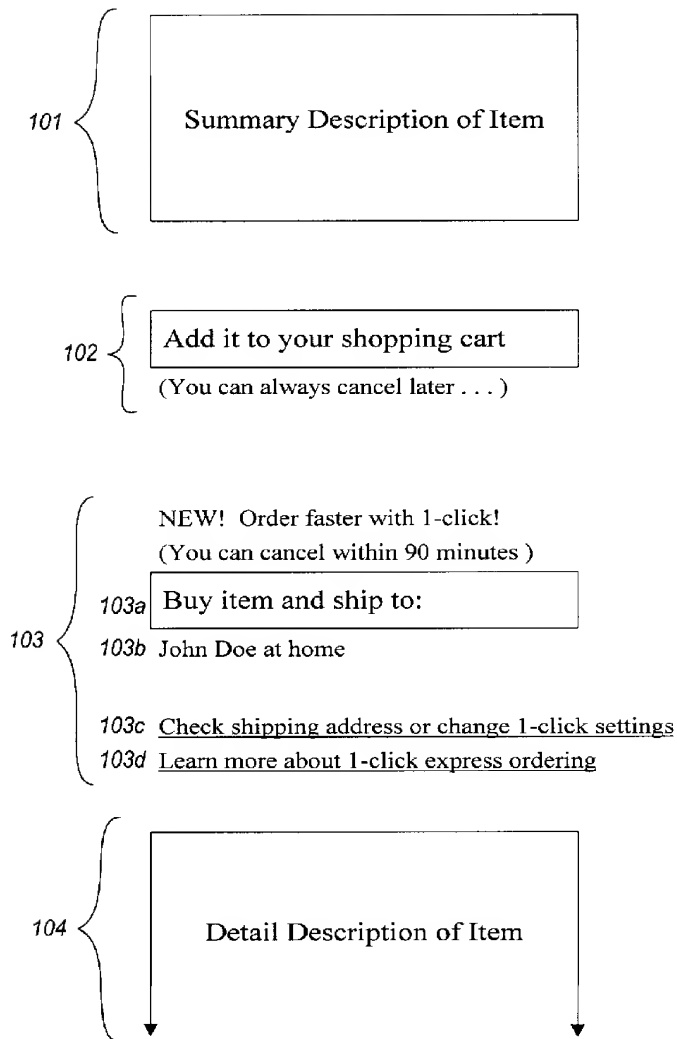
"Go-Cart Shopping Cart Software Features." 1996 GO International, Inc. <http://www.go-cart.com/features.html>. [Accessed Nov. 19, 1998].

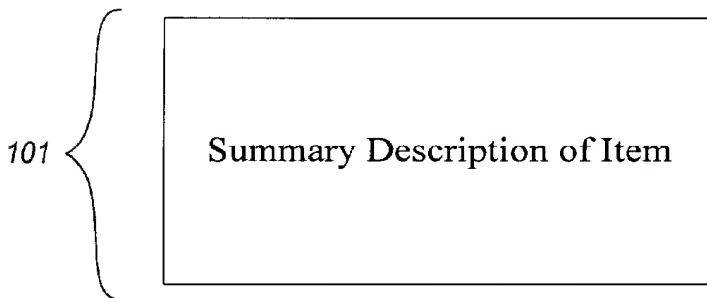
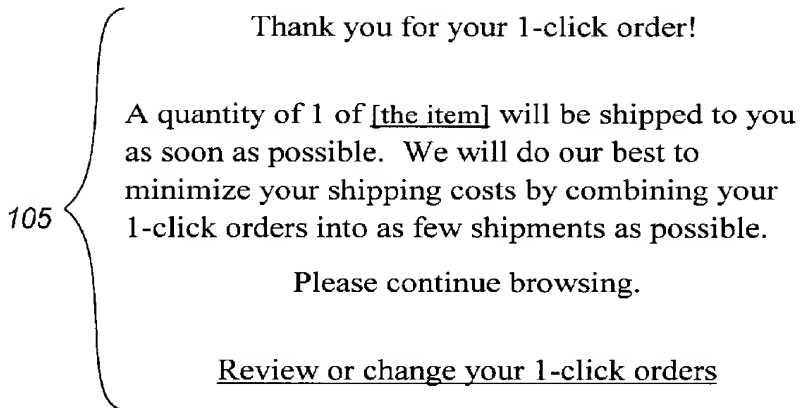
"PerlShop Manual (version 2.2)." 1996, ARPAnet Corp. <http://www.w3u.com/grokksoft/shop/perlman.html>. [Accessed Nov. 19, 1998].

"Sax Software Announces Sax NetSell; Sax NetSell's design-time ActiveX controls make Internet commerce easy." 1997, Sax Software Corp.

Baron, Chris and Bob Weil, "Implementing a Web Shopping Cart," *Dr. Dobbs's Journal*, Sep. 1996, pp. 64, 66, 68-69, and 83-85.

Hoque, Reaz, "A Shopping Cart Application with JavaScript," *Web Techniques*, May 1998, pp. 63, 65-66, and 68.

*Fig. 1A*



⋮

Fig. 1B

Summary of 1-Click Express Orders

Press this button if you Changed Quantities of any item below. If you don't press it, your changes won't "stick." You can set the quantity to 0 (zero) to cancel an item.

The 1-click orders below (available in 3 or fewer days) will be shipped together.

106 {	Order # 098337		
	1	Item 1	\$10.00
	1	Item 2	\$15.00
		Total	<u>\$25.00</u>

The 1-click orders below (available in one week or more) will be shipped together.

107 {	Order # 098336		
	1	Item 3	\$20.00
	1	Item 4	<u>\$ 6.00</u>
		Total	\$26.00

108 {	Ship to:	John Doe at home
	Shipment Method:	Standard Domestic Shipping
	Payment Method:	**** _ **** _ ***1_2345
	Continue Shopping	

1-Click Express shipping policies

Fig. 1C

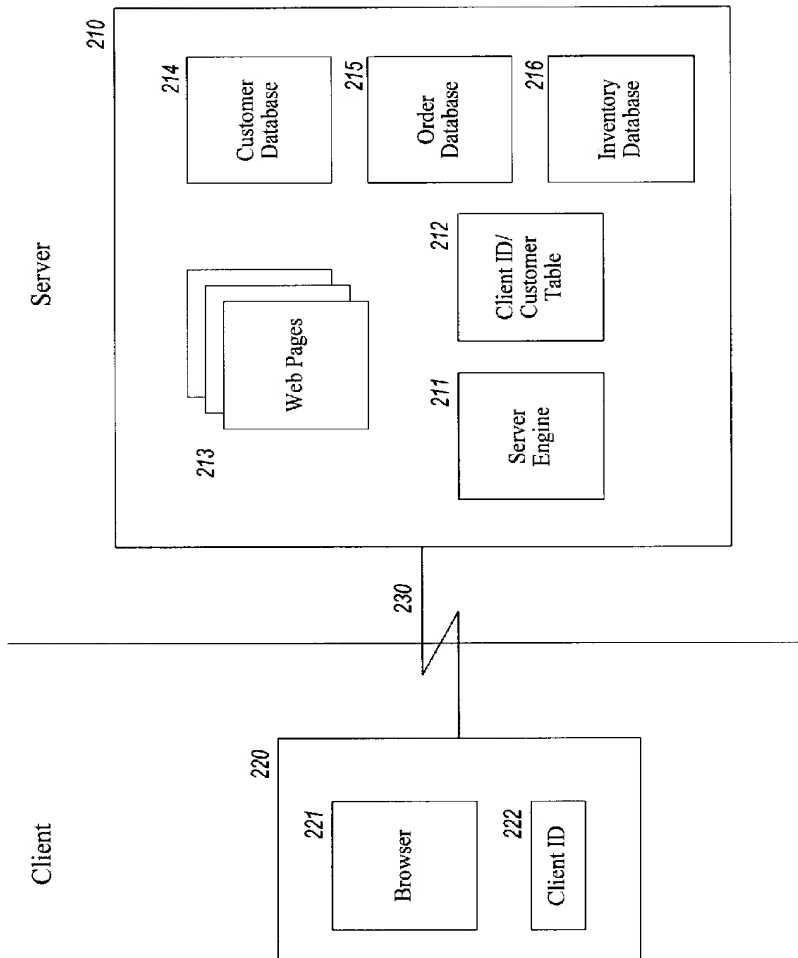
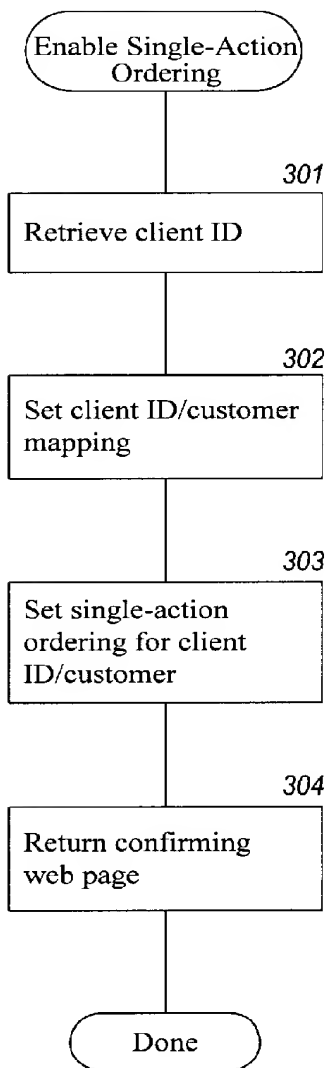
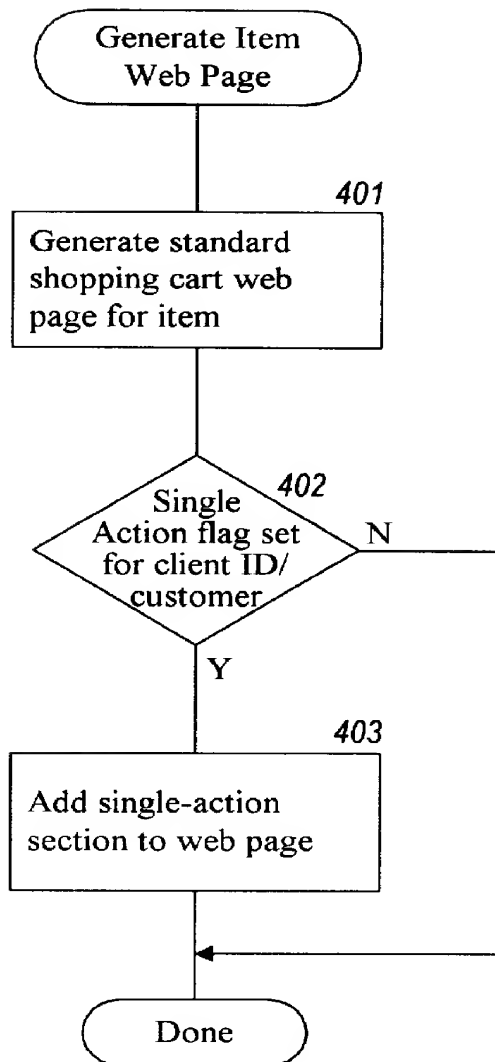
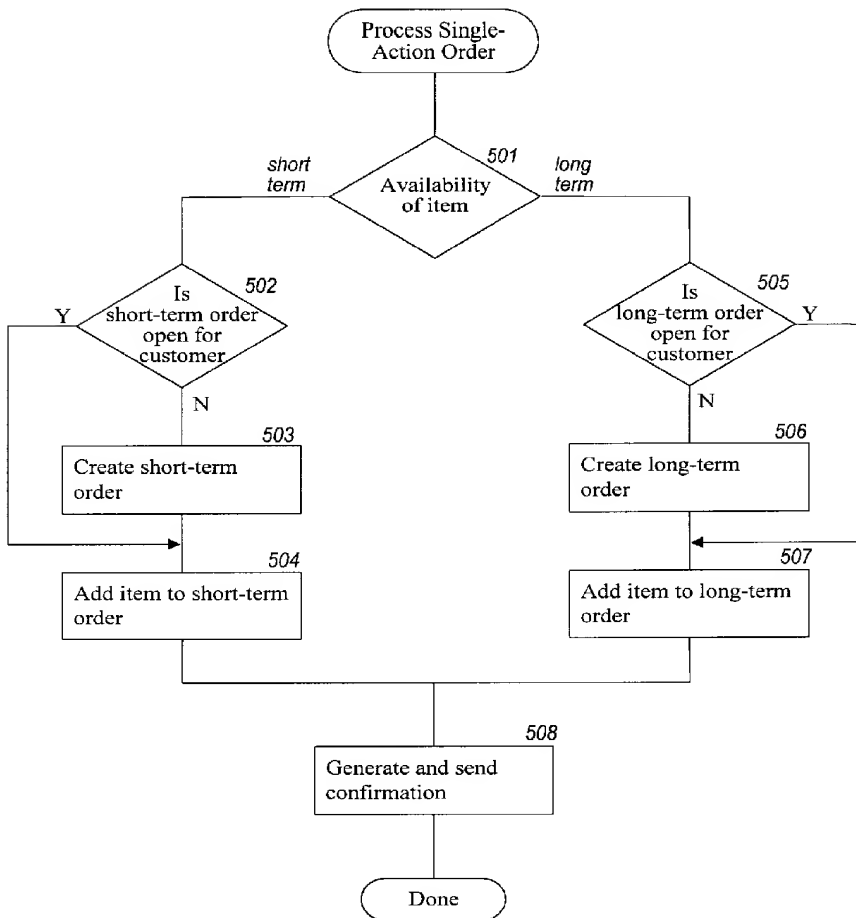
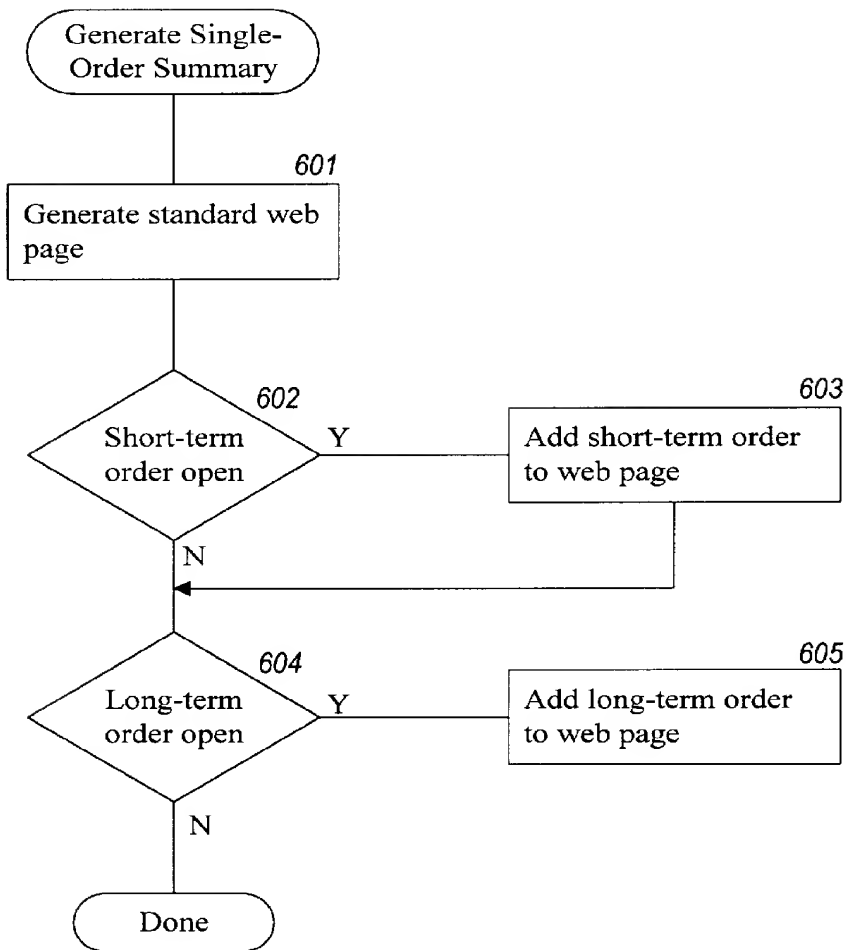


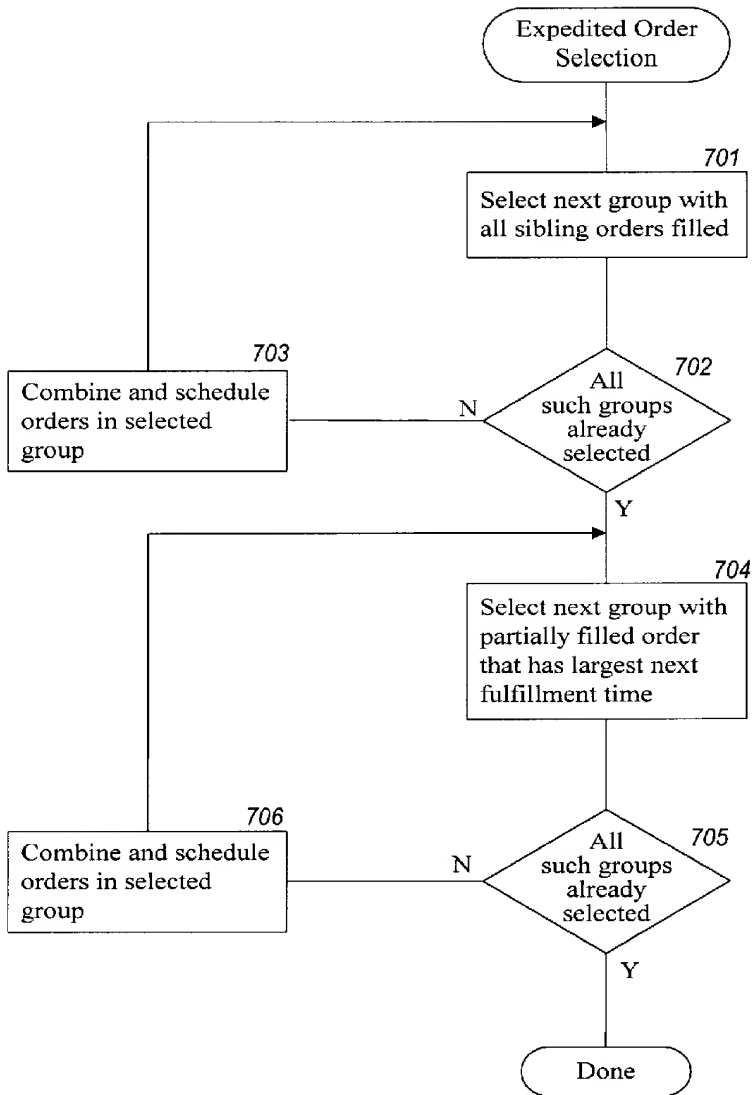
Fig. 2

*Fig. 3*

***Fig. 4***

**Fig. 5**

***Fig. 6***

**Fig. 7**

START

- A: Customer Name & Address
- B: Customer Financial Info
- C: Customer Employment Info
- D: Customer Education Info
- .
- .
- .

Fig. 8A

A: First Name :
M.I. :
Last Name :
Street :
City :
State : Zip :

Next

Previous

- B: Customer Financial Info
- C: Customer Employment Info
- D: Customer Education Info
- .
- .
- .

Fig. 8B

A: Customer Name & Address

B: Net Worth:

Annual Income:

Spouse's Annual Income:

Other Income:

Next

Previous

C: Customer Employment Info

D: Customer Education Info

·
·
·

Fig. 8C

METHOD AND SYSTEM FOR PLACING A PURCHASE ORDER VIA A COMMUNICATIONS NETWORK

TECHNICAL FIELD

The present invention relates to a computer method and system for placing an order and, more particularly, to a method and system for ordering items over the Internet.

BACKGROUND OF THE INVENTION

The Internet comprises a vast number of computers and computer networks that are interconnected through communication links. The interconnected computers exchange information using various services, such as electronic mail, Gopher, and the World Wide Web ("WWW"). The WWW service allows a server computer system (i.e., Web server or Web site) to send graphical Web pages of information to a remote client computer system. The remote client computer system can then display the Web pages. Each resource (e.g., computer or Web page) of the WWW is uniquely identifiable by a Uniform Resource Locator ("URL"). To view a specific Web page, a client computer system specifies the URL for that Web page in a request (e.g., a HyperText Transfer Protocol ("HTTP") request). The request is forwarded to the Web server that supports that Web page. When that Web server receives the request, it sends that Web page to the client computer system. When the client computer system receives that Web page, it typically displays the Web page using a browser. A browser is a special-purpose application program that effects the requesting of Web pages and the displaying of Web pages.

Currently, Web pages are typically defined using HyperText Markup Language ("HTML"). HTML provides a standard set of tags that define how a Web page is to be displayed. When a user indicates to the browser to display a Web page, the browser sends a request to the server computer system to transfer to the client computer system an HTML document that defines the Web page. When the requested HTML document is received by the client computer system, the browser displays the Web page as defined by the HTML document. The HTML document contains various tags that control the displaying of text, graphics, controls, and other features. The HTML document may contain URLs of other Web pages available on that server computer system or other server computer systems.

The World Wide Web is especially conducive to conducting electronic commerce. Many Web servers have been developed through which vendors can advertise and sell product. The products can include items (e.g., music) that are delivered electronically to the purchaser over the Internet and items (e.g., books) that are delivered through conventional distribution channels (e.g., a common carrier). A server computer system may provide an electronic version of a catalog that lists the items that are available. A user, who is a potential purchaser, may browse through the catalog using a browser and select various items that are to be purchased. When the user has completed selecting the items to be purchased, the server computer system then prompts the user for information to complete the ordering of the items. This purchaser-specific order information may include the purchaser's name, the purchaser's credit card number, and a shipping address for the order. The server computer system then typically confirms the order by sending a confirming Web page to the client computer system and schedules shipment of the items.

Since the purchaser-specific order information contains sensitive information (e.g., a credit card number), both

vendors and purchasers want to ensure the security of such information. Security is a concern because information transmitted over the Internet may pass through various intermediate computer systems on its way to its final destination. The information could be intercepted by an unscrupulous person at an intermediate system. To help ensure the security of the sensitive information, various encryption techniques are used when transmitting such information between a client computer system and a server computer system. Even though such encrypted information can be intercepted, because the information is encrypted, it is generally useless to the interceptor. Nevertheless, there is always a possibility that such sensitive information may be successfully decrypted by the interceptor. Therefore, it would be desirable to minimize the sensitive information transmitted when placing an order.

The selection of the various items from the electronic catalogs is generally based on the "shopping cart" model. When the purchaser selects an item from the electronic catalog, the server computer system metaphorically adds that item to a shopping cart. When the purchaser is done selecting items, then all the items in the shopping cart are "checked out" (i.e., ordered) when the purchaser provides billing and shipment information. In some models, when a purchaser selects any one item, then that item is "checked out" by automatically prompting the user for the billing and shipment information. Although the shopping cart model is very flexible and intuitive, it has a downside in that it requires many interactions by the purchaser. For example, the purchaser selects the various items from the electronic catalog, and then indicates that the selection is complete. The purchaser is then presented with an order Web page that prompts the purchaser for the purchaser-specific order information to complete the order. That Web page may be prefilled with information that was provided by the purchaser when placing another order. The information is then validated by the server computer system, and the order is completed. Such an ordering model can be problematic for a couple of reasons. If a purchaser is ordering only one item, then the overhead of confirming the various steps of the ordering process and waiting for, viewing, and updating the purchaser-specific order information can be much more than the overhead of selecting the item itself. This overhead makes the purchase of a single item cumbersome. Also, with such an ordering model, each time an order is placed sensitive information is transmitted over the Internet. Each time the sensitive information is transmitted over the Internet, it is susceptible to being intercepted and decrypted.

SUMMARY OF THE INVENTION

An embodiment of the present invention provides a method and system for ordering an item from a client system. The client system is provided with an identifier that identifies a customer. The client system displays information that identifies the item and displays an indication of an action (e.g., a single action such as clicking a mouse button) that a purchaser is to perform to order the identified item. In response to the indicated action being performed, the client system sends to a server system the provided identifier and a request to order the identified item. The server system uses the identifier to identify additional information needed to generate an order for the item and then generates the order.

The server system receives and stores the additional information for customers using various computer systems so that the server system can generate such orders. The server system stores the received additional information in association with an identifier of the customer and provides

the identifier to the client system. When requested by the client system, the server system provides information describing the item to the requesting client system. When the server system receives a request from a client system, the server system combines the additional information stored in association with the identifier included in the request to effect the ordering of the item.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1A–1C illustrate single-action ordering in one embodiment of the present invention.

FIG. 2 is a block diagram illustrating an embodiment of the present invention.

FIG. 3 is a flow diagram of a routine that enables single-action ordering for a customer.

FIG. 4 is a flow diagram of a routine to generate a Web page in which single-action ordering is enabled.

FIG. 5 is a flow diagram of a routine which processes a single-action order.

FIG. 6 is a flow diagram of a routine for generating a single-action order summary Web page.

FIG. 7 is a flow diagram of a routine that implements an expedited order selection algorithm.

FIGS. 8A–8C illustrate a hierarchical data entry mechanism in one embodiment.

DETAILED DESCRIPTION OF THE INVENTION

The present invention provides a method and system for single-action ordering of items in a client/server environment. The single-action ordering system of the present invention reduces the number of purchaser interactions needed to place an order and reduces the amount of sensitive information that is transmitted between a client system and a server system. In one embodiment, the server system assigns a unique client identifier to each client system. The server system also stores purchaser-specific order information for various potential purchasers. The purchaser-specific order information may have been collected from a previous order placed by the purchaser. The server system maps each client identifier to a purchaser that may use that client system to place an order. The server system may map the client identifiers to the purchaser who last placed an order using that client system. When a purchaser wants to place an order, the purchaser uses a client system to send the request for information describing the item to be ordered along with its client identifier. The server system determines whether the client identifier for that client system is mapped to a purchaser. If so mapped, the server system determines whether single-action ordering is enabled for that purchaser at that client system. If enabled, the server system sends the requested information (e.g., via a Web page) to the client computer system along with an indication of the single action to perform to place the order for the item. When single-action ordering is enabled, the purchaser need only perform a single action (e.g., click a mouse button) to order the item. When the purchaser performs that single action, the client system notifies the server system. The server system then completes the order by adding the purchaser-specific order information for the purchaser that is mapped to that client identifier to the item order information (e.g., product identifier and quantity). Thus, once the description of an item is displayed, the purchaser need only take a single action to place the order to purchase that item. Also, since the client identifier identifies purchaser-specific order infor-

mation already stored at the server system, there is no need for such sensitive information to be transmitted via the Internet or other communications medium.

FIGS. 1A–1C illustrate single-action ordering in one embodiment of the present invention. FIG. 1A illustrates the display of a Web page describing an item that may be ordered. This example Web page was sent from the server system to the client system when the purchaser requested to review detailed information about the item. This example Web page contains a summary description section 101, a shopping cart section 102, a single-action ordering section 103, and a detailed description section 104. One skilled in the art would appreciate that these various sections can be omitted or rearranged or adapted in various ways. In general, the purchaser need only be aware of the item or items to be ordered by the single action and of the single action needed to place the order. The summary description and the detailed description sections provide information that identifies and describes the item(s) that may be ordered. The shopping cart section provides the conventional capability to add the described item to a shopping cart. The server system adds the summary description, the detailed description, and the shopping cart sections to each Web page for an item that may be ordered. The server system, however, only adds the single-action ordering section when single-action ordering is enabled for that purchaser at that client system. (One skilled in the art would appreciate that a single Web page on the server system may contain all these sections but the single-action ordering section can be selectively included or excluded before sending the Web page to the client system.) This example single-action ordering section allows the purchaser to specify with a single click of a mouse button to order the described item. Once the purchaser clicks the mouse button, the item is ordered, unless the purchaser then takes some action to modify the order. The single-action ordering section contains a single-action ordering button 103a, purchaser identification subsection 103b, and single-action ordering information subsections 103c and 103d. The purchaser information subsection displays enough information so that the purchaser can verify that the server system correctly recognizes the purchaser. To reduce the chances of sensitive information being intercepted, the server system sends only enough information so that the purchaser is confident that the server system correctly identified the purchaser but yet not enough information to be useful to an unscrupulous interceptor. The additional information subsections allow the purchaser to obtain various settings or obtain more information related to the single-action ordering. If the purchaser wants to verify the shipping address, the purchaser can select the "check shipping address" label. In response to this selection, the server system may require the purchaser to perform a "login" so that the identity of the purchaser can be verified before the shipping information is viewed or modified. The server system then sends a Web page to the client system for display and possible modification of the shipping address. In this way, the transmitting of the sensitive shipping address can be avoided unless requested by the verified purchaser.

When the purchaser selects the single-action ordering button, the client system sends a message to the server system requesting that the displayed item be ordered. After the server system processes the message, the server system provides to the client system a new Web page that confirms receipt of the single-action order. FIG. 1B illustrates the display of a Web page confirming a single-action order. The confirming Web page contains essentially the same information as the Web page describing the item (i.e., FIG. 1A)

except that an order confirmation section **105** is displayed at the top of the Web page. The order confirmation section confirms that the order has been placed and provides an opportunity for the purchaser to review and change the single-action order. Alternatively, the confirming Web page can be identical to the Web page describing the item (i.e., FIG. 1A), except that the single-action ordering button is replaced with a message confirming the order.

If a single-action ordering is not currently enabled for the client system but could be enabled, then the server system can generate a Web page like FIG. 1A, except that the single-action ordering button **103a** is replaced by a single-action ordering enable button. Such a replacement button could contain text instructing the purchaser to click on the button to enable single-action ordering. When the purchaser clicks on that button, the server system would send the Web page of FIG. 1A to be displayed. Single-action ordering can be enabled whenever the server system has stored sufficient purchaser-specific order information for that client system to complete a single-action order. If the server system does not have sufficient information, then when the purchaser selects the single-action ordering button, the server system can provide a Web page to collect the additional information that is needed. The server system may require the purchaser to "login" so that the identity of the purchaser can be verified before the single-action ordering is enabled.

To help minimize shipping costs and purchaser confusion, the server system may combine various single-action orders into a multiple-item order. For example, if a purchaser orders one item using the single-action ordering and five minutes later orders another item using the single-action ordering, then those orders may be cost effectively combined into a single order for shipping. The server system combines the single-action orders when their expected ship dates are similar. For example, if one item is immediately available and the other item will be available in one day, then the two single-action orders may be cost-effectively combined. However, if the other item will not be available for two weeks, then the two single-item orders would not be combined. FIG. 1C illustrates the display of a Web page representing four single-action orders that have been combined into two separate multiple-item orders based on the availability of the items. The order information **106** indicates that item **1** and item **2**, which will be available in three or fewer days, have been combined into one order. The order information **107** indicates that items **3** and **4**, which will not be available within one week, are combined into a separate order. In one embodiment, the server system may combine single-action orders that are placed within a certain time period (e.g., 90 minutes). Also, the server system may combine or divide orders when the orders are scheduled for shipment based on the then current availability of the items ordered. This delayed modification of the orders is referred to as "expedited order selection" and is described below in detail.

FIG. 2 is a block diagram illustrating an embodiment of the present invention. This embodiment supports the single-action ordering over the Internet using the World Wide Web. The server system **210** includes a server engine **211**, a client identifier/customer table **212**, various Web pages **213**, a customer database **214**, an order database **215**, and an inventory database **216**. The server engine receives HTTP requests to access Web pages identified by URLs and provides the Web pages to the various client systems. Such an HTTP request may indicate that the purchaser has performed the single action to effect single-action ordering. The customer database contains customer information for vari-

ous purchasers or potential purchasers. The customer information includes purchaser-specific order information such as the name of the customer, billing information, and shipping information. The order database **215** contains an entry for each order that has not yet been shipped to a purchaser. The inventory database **216** contains a description of the various items that may be ordered. The client identifier/customer table **212** contains a mapping from each client identifier, which is a globally unique identifier that uniquely identifies a client system, to the customer last associated with that client system. The client system **220** contains a browser and its assigned client identifier. The client identifier is stored in a file, referred to as a "cookie." In one embodiment, the server system assigns and sends the client identifier to the client system once when the client system first interacts with the server system. From then on, the client system includes its client identifier with all messages sent to the server system so that the server system can identify the source of the message. The server and client systems interact by exchanging information via communications link **230**, which may include transmission over the Internet.

One skilled in the art would appreciate that the single-action ordering techniques can be used in various environments other than the Internet. For example, single-action ordering can also be in an electronic mail environment in which an item is described in an electronic mail message along with an indication of the single action that is to be performed to effect the ordering of the item. Also, various communication channels may be used such as local area network, wide area network, or point-to-point dial up connection. Also, a server system may comprise any combination of hardware or software that can generate orders in response to the single action being performed. A client system may comprise any combination of hardware or software that can interact with the server system. These systems may include television-based systems or various other consumer products through which orders may be placed.

FIG. 3 is a flow diagram of a routine that enables single-action ordering for a customer. To enable single-action ordering, a server system needs to have information about the customer that is equivalent to the purchaser-specific order information. The server system can obtain this information in various ways. First, the server system could ask the customer if they would like to have single-action ordering enabled. If so, then the server system could prompt the customer using a Web page for the purchaser-specific order information. Second, the server system could also save the purchaser-specific order information collected when an order is placed conventionally. The server system could, either automatically or with the customer's assent, enable single-action ordering. In step **301**, the server system retrieves the client identifier that was sent by the client system. In step **302**, the server system updates the client identifier/customer table to indicate that the generated client identifier has been associated with that customer. In step **303**, the server system sets a flag indicating that single-action ordering is enabled for that client identifier and that customer combination. That flag may be stored in the client identifier/customer table. In step **304**, the server system supplies a confirming Web page to the client system. The next time a purchaser attempts to order an item, the client system will supply its client identifier to the server system. If single-action ordering is enabled for that purchaser, the server system will assume that the purchaser is the customer associated with that client identifier in the client identifier/customer table. Thus, a purchaser may not want to allow the

server system to enable single-action ordering if there is a possibility that someone else may use that same client system.

FIG. 4 is a flow diagram of a routine to generate a Web page in which single-action ordering is enabled. When single-action ordering is enabled, the server system generates a Web page describing an item as is conventionally done and then adds a single-action ordering section. In one embodiment, the server system adds partial purchaser-specific order information to the section. This information may include the customer's name, a shipping address moniker selected by the purchaser (e.g., "at home"), and the last five digits of a credit card number or a nickname selected by the purchaser. Such partial information should be the minimum information sufficient to indicate to the purchaser whether or not the server system is using the correct purchaser-specific order information. In step 401, the server system generates a standard shopping cart-type Web page for the item. In step 402, if the single-action ordering flag has been set for the client identifier and customer combination, then the server system continues at step 403, else the server system completes. In step 403, the server system adds the single-action section to the Web page and completes.

FIG. 5 is a flow diagram of a routine which processes a single-action order. When a purchaser performs the single action needed to place an order, the client system notifies the server system. The server system then combines the purchaser-specific order information for the customer associated with the client system with the item order information to complete the order. The single-action order may also be combined with other single-action orders and possibly with other conventionally placed orders to reduce shipping costs. In one embodiment, single-action orders can be combined if they are placed within a certain time period of each other (e.g., 90 minutes). This routine illustrates the combining of the single-action orders into a short-term order (e.g., available to be shipped in less than a week) and a long-term order (e.g., available to be shipped in more than a week). One skilled in the art would appreciate that the single-action orders can be combined in various ways based on other factors, such as size of shipment and intermediate-term availability. In step 501, if the item is expected to be shipped in the short term, then the server system continues at step 502, else the server system continues at step 505. In step 502, if a short-term order has already been opened for the purchaser, then the server system continues at step 504, else the server system continues at step 503. In step 503, the server system creates a short-term order for the purchaser. In step 504, the server system adds the item to the short-term order and continues at step 508. In step 505, if a long-term order has already been opened for the purchaser, then the server system continues at step 507, else the server system continues at step 506. In step 506, the server system creates a long-term order for the purchaser. In step 507, the server system adds the item to the long-term order. In step 508, the server system generates and sends the confirmation and completes.

FIG. 6 is a flow diagram of a routine for generating a single-action order summary Web page. This Web page (e.g., FIG. 1C) gives the user the opportunity to view and modify the short-term and long-term single-action orders. In step 601, the server system adds the standard single-action order information to the Web page. In step 602, if a short-term order is open, then the server system adds the short-term order to the Web page in step 603. In step 604, if a long-term order is open, then the server system adds the long-term order information to the Web page in step 605 and completes.

FIG. 7 is a flow diagram of a routine that implements an expedited order selection algorithm. The goal of the expedited order selection algorithm is to minimize the number of orders sent to each destination so that shipping costs are reduced. A destination may be a specific shipping address plus a specific purchaser's billing details. Orders that are sent to the same destination are known as "sibling orders." The algorithm has two stages. In the first stage, the algorithm schedules for shipment the orders for destinations for which all the sibling orders are filled. An order is filled when all its items are currently in inventory (i.e., available) and can be shipped. For each group of sibling orders, the algorithm combines those sibling orders into a single combined order so that only one order is currently scheduled for shipment to each destination. In the second stage, the algorithm combines and schedules groups of sibling orders for which some of the sibling orders are not filled or partially filled. The algorithm may split each partially filled sibling order into a filled sibling order and a completely unfilled sibling order. The algorithm then combines all the filled sibling orders into a single combined order and schedules the combined order for shipment. If any group has only one sibling order and that order is partially filled, then the algorithm in one embodiment does not split that order to avoid making an extra shipment to that destination.

During the second stage, the algorithm may select and schedule groups of sibling orders in a sequence that is based on the next fulfillment time for an item in the group. The next fulfillment time for a group of sibling orders is the minimum expected fulfillment time of the items in that group of sibling orders. For example, if a group of sibling orders has seven items that are not yet fulfilled and their expected fulfillment times range from 3 days to 14 days, then the next fulfillment time for that group is 3 days. The algorithm first schedules those groups of sibling orders with the largest next fulfillment time. For example, if 6 groups have next fulfillment times of 3, 5, 7, 10, 11, and 14 days, respectively, then the algorithm first selects and schedules the sibling orders in the group with the next fulfillment time of 14 days, followed by the group with the next fulfillment time of 11 days, and so on. By delaying the scheduling of groups with short next fulfillment times, the algorithm increases the chances of additional items becoming available (because of the shortness of the next fulfillment time) and thus combined with the scheduled order.

Steps 701–703 represent the first stage of the expedited order selection algorithm, and steps 704–706 represent the second stage of the expedited selection order algorithm. In steps 701–703, the algorithm loops selecting groups in which all sibling orders are filled and combining the orders. In step 701, the algorithm selects the next group with all sibling orders that are filled. In step 703, if all such groups have already been selected, then the algorithm continues with the second stage in step 704, else the algorithm continues at step 703. In step 703, the algorithm combines and schedules the orders in the selected group and loops to step 701. In step 704, the algorithm selects the next group of sibling orders that has the largest next fulfillment time. In step 705, if all such groups have already been selected, then the algorithm is done, else the algorithm continues at step 706. In step 706, the algorithm combines and schedules the orders in the selected group and loops to step 704. When the expedited order selection algorithm is being performed, new orders and new inventory may be received. Whenever such new orders and new inventory is received, then the algorithm restarts to schedule and combine the new orders as appropriate.

Although the algorithm has been described as having two stages, it could be implemented in an incremental fashion where the assessment of the first and second stages are redone after each order is scheduled. One skilled in the art would recognize that there are other possible combinations of these stages which still express the same essential algorithm.

FIGS. 8A-8C illustrate a hierarchical data entry mechanism in one embodiment. When collecting information from a user, a Web page typically consists of a long series of data entry fields that may not all fit onto the display at the same time. Thus, a user needs to scroll through the Web page to enter the information. When the data entry fields do not fit onto the display at the same time, it is difficult for the user to get an overall understanding of the type and organization of the data to be entered. The hierarchical data entry mechanism allows a user to understand the overall organization of the data to be entered even though the all data entry fields would not fit onto the display at the same time. FIG. 8A illustrates an outline format of a sample form to be filled in. The sample form contains various sections identified by letters A, B, C, and D. When the user selects the start button, then section A expands to include the data entry fields for the customer name and address. FIG. 8B illustrates the expansion of section A. Since only section A has been expanded, the user can view the data entry fields of section A and summary information of the other sections at the same time. The user then enters data in the various data entry fields that are displayed. Upon completion, the user selects either the next or previous buttons. The next button causes section A to be collapsed and section B to be expanded so that financial information may be entered. FIG. 8C illustrates the expansion of section B. If the previous button is selected, then section A would collapse and be displayed as shown in FIG. 8A. This collapsing and expanding is repeated for each section. At any time during the data entry, if an error is detected, then a Web page is generated with the error message in close proximity (e.g., on the line below) to the data entry field that contains the error. This Web page is then displayed by the client system to inform the user of the error. In addition, each of the data "entry" fields may not be editable until the user clicks on the data entry field or selects an edit button associated with the data entry field. In this way, the user is prevented from inadvertently changing the contents of an edit field. When the user clicks on a data entry field, a new Web page is presented to the user that allows for the editing of the data associated with the field. When editing is complete, the edited data is displayed in the data "entry" field. Because the fields of the form are thus not directly editable, neither "named-submit" buttons nor Java are needed. Also, the form is more compact because the various data entry options (e.g., radio button) are displayed only on the new Web page when the field is to be edited.

Although the present invention has been described in terms of various embodiments, it is not intended that the invention be limited to these embodiments. Modification within the spirit of the invention will be apparent to those skilled in the art. For example, the server system can map a client identifier to multiple customers who have recently used the client system. The server system can then allow the user to identify themselves by selecting one of the mappings based preferably on a display of partial purchaser-specific order information. Also, various different single actions can be used to effect the placement of an order. For example, a voice command may be spoken by the purchaser, a key may be depressed by the purchaser, a button on a television remote control device may be depressed by the purchaser, or

selection using any pointing device may be effected by the purchaser. Although a single action may be preceded by multiple physical movements of the purchaser (e.g., moving a mouse so that a mouse pointer is over a button), the single action generally refers to a single event received by a client system that indicates to place the order. Finally, the purchaser can be alternately identified by a unique customer identifier that is provided by the customer when the customer initiates access to the server system and sent to the server system with each message. This customer identifier could be also stored persistently on the client system so that the purchaser does not need to re-enter their customer identifier each time access is initiated. The scope of the present invention is defined by the claims that follow.

We claim:

1. A method of placing an order for an item comprising:
 - under control of a client system,
 - displaying information identifying the item; and
 - in response to only a single action being performed,
 - sending a request to order the item along with an identifier of a purchaser of the item to a server system;
- under control of a single-action ordering component of the server system,
- receiving the request;
- retrieving additional information previously stored for the purchaser identified by the identifier in the received request; and
- generating an order to purchase the requested item for the purchaser identified by the identifier in the received request using the retrieved additional information; and
- fulfilling the generated order to complete purchase of the item
- whereby the item is ordered without using a shopping cart ordering model.
2. The method of claim 1 wherein the displaying of information includes displaying information indicating the single action.
3. The method of claim 1 wherein the single action is clicking a button.
4. The method of claim 1 wherein the single action is speaking of a sound.
5. The method of claim 1 wherein a user of the client system does not need to explicitly identify themselves when placing an order.
6. A client system for ordering an item comprising:
 - an identifier that identifies a customer;
 - a display component for displaying information identifying the item;
 - a single-action ordering component that in response to performance of only a single action, sends a request to a server system to order the identified item, the request including the identifier so that the server system can locate additional information needed to complete the order and so that the server system can fulfill the generated order to complete purchase of the item; and
 - a shopping cart ordering component that in response to performance of an add-to-shopping-cart action, sends a request to the server system to add the item to a shopping cart.
7. The client system of claim 6 wherein the display component is a browser.
8. The client system of claim 6 wherein the predefined action is the clicking of a mouse button.
9. A server system for generating an order comprising:
 - a shopping cart ordering component; and

11

a single-action ordering component including:

a data storage medium storing information for a plurality of users;

a receiving component for receiving requests to order an item, a request including an indication of one of the plurality of users, the request being sent in response to only a single action being performed; and

an order placement component that retrieves from the data storage medium information for the indicated user and that uses the retrieved information to place an order for the indicated user for the item; and

an order fulfillment component that completes a purchase of the item in accordance with the order placed by the single-action ordering component.

10. The server system of claim 9 wherein the request is sent by a client system in response to a single action being performed.

11. A method for ordering an item using a client system, the method comprising:

displaying information identifying the item and displaying an indication of a single action that is to be performed to order the identified item; and

in response to only the indicated single action being performed, sending to a server system a request to order the identified item

whereby the item is ordered independently of a shopping cart model and the order is fulfilled to complete a purchase of the item.

12. The method of claim 11 wherein the server system uses an identifier sent along with the request to identify additional information needed to generate an order for the item.

13. The method of claim 12 wherein the identifier identifies the client system and the server system provides the identifier to the client system.

12

14. The method of claim 11 wherein the client system and server system communicate via the Internet.

15. The method of claim 11 wherein the displaying includes displaying an HTML document provided by the server system.

16. The method of claim 11 including sending from the server system to the client system a confirmation that the order was generated.

17. The method of claim 11 wherein the single action is clicking a mouse button when a cursor is positioned over a predefined area of the displayed information.

18. The method of claim 11 wherein the single action is a sound generated by a user.

19. The method of claim 11 wherein the single action is selection using a television remote control.

20. The method of claim 11 wherein the single action is depressing of a key on a key pad.

21. The method of claim 11 wherein the single action is selecting using a pointing device.

22. The method of claim 11 wherein the single action is selection of a displayed indication.

23. The method of claim 11 wherein the displaying includes displaying partial information supplied by the server system as to the identity of a user of the client system.

24. The method of claim 11 wherein the displaying includes displaying partial shipping information supplied by the server system.

25. The method of claim 11 wherein the displaying includes displaying partial payment information supplied by the server system.

26. The method of claim 11 wherein the displaying includes displaying a moniker identifying a shipping address for the customer.

* * * * *